REMARKS

Claims 1-8 are pending. Claims 4-6 have been withdrawn from consideration. In this Amendment, claim 1 is amended. Claim 1 has been amended to clarify that the thermally conductive sheet is fire-retardant and flexible. Support for the amendment may be found, for example, in Applicant's specification at page 4, lines 4-6. After this amendment, claims 1-3 and 7-8 remain pending. Applicant believes that the amendment to the claims place the application in condition for allowance. Applicant respectfully requests reconsideration of the application and amended claims, and prompt allowance of all pending claims in view of the following arguments.

Response to Restriction Requirement and Election of Claims

In the Office Action dated September 5, 2007, Claims 1, 2 and 8 were alleged to be generic, and claims 1-8 were purported to include more than species of the generic invention. These species were alleged to lack unity of invention under PCT Rule 13.1, because they are allegedly not so linked as to form a single general inventive concept under PCT Rule 13.2. The claims were restricted as follows:

Group I – claims 1-3 and 7-8 (organophospohorous compound);

Group II – claims 1-2, 4 and 8 (triazine skeleton-containing compound);

Group III – claims 1-2, 5 and 8 (expanded graphite); and

Group IV – claims 1-2, 6 and 8 (polyphenylene ether).

During a telephone conversation with Scott Bardell on August 27, 2007, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-3 and 7-8. In order to comply with 37 CFR § 1.142, Applicant hereby affirms the election to prosecute Group I, claims 1-3 and 7-8.

Rejections under 35 U.S.C. § 102 and § 103

Claims 1-3 and 7-8 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as allegedly being obvious over Yamazaki et al. (JP 2000-313785).[1] The Office Action alleges that Yamazaki et al. discloses a resin composition

[1] Office Action dated September 5, 2007, ¶ 9.

for fire-resistant molding materials suitably used as a sheet (paragraph 0001). The Office Action also alleges that Yamazaki et al. discloses that it is desirable to use 100-300 parts by weight of aluminum hydroxide to 100 parts of the resin (paragraph 0028) and reads on the wt% of metal hydroxide of Applicant's claim 1.[2] The Office Action specifically references Yamazaki et al. Examples 1-3 (Table 1) as allegedly supporting a wt% that reads on the wt% of Applicant's claim 1.[3] Applicant respectfully traverses the rejection to the extent that it applies to independent claim 1, as amended, and dependent claims 2-3 and 7-8, which depend from independent claim 1.

Applicant respectfully disagrees with the rejections of the claims, at least because the Office has failed to meet its burden of establishing that Yamazaki et al. discloses "all-elements" of Applicant's claimed invention, as required to properly anticipate Applicant's claimed invention.[4] Furthermore, Applicant respectfully disagrees with the rejections of the claims, as the Office has at least failed to meet its burden of establishing a proper *prima facie* case of obviousness in view of Yamazaki et al.[5] A proper *prima facie* case of obviousness requires that the Office establish three facts:[6]

1. identification of a motivation to combine/modify the cited references;
2. a showing that the proposed combination provides a reasonable expectation of success; and
3. a teaching or suggestion of all of the claim limitations.

Applicant respectfully contends that the Office fails to establish a proper case of *prima facie* obviousness, at least by failing to establish that Yamazaki et al. discloses, teaches or suggests all limitations of Applicant's claimed invention.

With respect to the rejections of independent claim 1, as amended, and dependent claims 2-3 and 7-8, which depend from independent claim 1, for alleged anticipation by, or, in the alternative, under 35 U.S.C. § 103(a), for alleged obviousness over, Yamazaki et al., Applicant respectfully contends that the Office has at least not established that Yamazaki et al. discloses Applicant's claimed hydrated metal compound, wherein the composition includes the hydrated

[2] *Id.*
[3] *Id.*
[4] *See Hybritech Inc. v. Monoclonal Antibodies, Inc* , 231 USPQ 81 (Fed. Cir. 1986).
[5] *See* MPEP § 2142
[6] M.P.E.P. § 2143.

metal compound in an amount of **40-90 vol%** of the total volume of the composition, wherein **the thermally conductive sheet is flexible.** Applicant respectfully contends that the Office has not met it burden of showing that Yamazaki et al. discloses all elements or all limitations of Applicant's claimed invention, at least because Applicant's independent claim 1 claims a hydrated metal in an amount of 40-90 **volume percent** of the **total volume** of the composition, whereas the Office has only alleged that Yamazaki et al. discloses a **weight percent** of the **total weight** of the composition. Furthermore, the Office has not met its burden of establishing that Yamazaki et al. discloses a **flexible** thermally conductive sheet, as presently claimed in Applicant's independent claim 1. The rejection of independent claim 1 under 35 U.S.C. § 102(b), as being allegedly anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as allegedly obvious over Yamazaki et al., has been overcome and should be withdrawn.

In addition, Applicant respectfully contends that the Office has not established a proper *prima* facie case of obviousness, at least by failing to show that the reference provides a reasonable expectation of success in arriving at Applicant's claimed invention. Applicant has broadly claimed a thermally conductive sheet that is halogen-free, flame-retardant and **flexible.** Applicant respectfully directs the Examiner's attention to Applicant's specification, wherein Applicant distinguishes Yamazaki et al. and other references in the art with respect to the unsolved problem of obtaining a **flexible**, fire-retardant, thermally conductive sheet that is halogen-free.[7] Applicant expressly distinguishes Yamazaki et al. as follows:

> Japanese Unexamined Patent Publication (Kokai) No. 2000-313785 discloses a radically polymerizable compositioin containing a phosphate ester (meth)acrylate and also discloses that the composition may contain aluminum hydroxide. Since because this phosphate ester contains mono-, di- and tri-functional groups in a certain proportion, comparatively hard cured article is obtained. Also the phosphate ester is not compatible with a long-chain alkyl group (meth)acrylic monomer because of its high polarity, and therefore a copolymer with **poor flexibility is obtained**. Thus, the composition disclosed in Japanese Unexamined Patent Publication (Kokai) No. 2000-313785 is, as described in its specification, a composition suited for use in the preparation of molded articles such as building materials. As a result, the composition is not suited for use in thermally conductive sheets which require sufficient flexibility.[8]

[7] Applicant's Specification, page 1, line 4 – page 3, line 15.
[8] *Id.*, page 2, lines 8-19 (*emphasis added*).

Applicant respectfully submits that the Office has not established that the art recognized the desirability of having a **flexible** thermally conductive, fire-retardant sheet, or even that the art would have recognized the desirability of controlling the **volume percentage** of the hydrated metal compound comprising the thermally conductive sheet in an amount of 40-90 vol% of the total volume of the composition in order to achieve the desired **flexibility** combined with fire-resistance without use of halogenated fire-retardants.

Furthermore, Applicant respectfully contends that Applicant's independent claim 1 expressly claims a thermally conductive fire retardant sheet made of a composition comprising:

(A) a (meth)acrylic polymer,

(B) a halogen-free flame retardant selected from the group consisting of an organophosphorus compound, a triazine skeleton-containing compound, an expanded graphite and polyphenylene ether, and

(C) a hydrated metal compound.

Applicant respectfully notes that **three distinct chemical compounds are claimed** in Applicant's independent claim 1: the (meth)acrylic polymer, the halogen-free flame retardant compound, and the hydrated metal compound. Applicant respectfully submits, however, that Yamazaki et al. actually discloses a flame retardant resin composition comprising **only two compounds**: a radical polymerizable resin that includes ester (meth)acrylate phosphate, and aluminum hydroxide.[9] Applicant believes that the ester (meth)acrylate phosphate disclosed by Yamazaki et al. (which the Office alleges is a halogen-free flame retardant organophosphorous compound according to Applicant's claim 1) is actually polymerized, e.g. by free radical polymerization, to form Yamazaki et al.'s radical polymerizable resin compound, which is then combined with aluminum hydroxide.[10] Applicant respectfully submits that the Office has only established that Yamazaki et al. discloses a flame retardant resin composition comprising **only two compounds**, at least because Yamazaki et al. discloses that the ester (meth)acrylate phosphate is radically polymerized (with other radically polymerizable monomers) to form the

[9] Yamazaki et al., claim 1 and ¶ [0009].
[10] *Id* , ¶ [0009]-[0029], *see particularly* ¶ [0027]-[0029] and Examples 1-4.

radical polymerizable resin (a first compound) that is combined with aluminum hydroxide (a second compound) to form the flame retardant resin composition.

In addition, Applicant respectfully contends that Yamazaki et al. expressly teaches away from Applicant's claimed thermally conductive fire retardant flexible sheet comprising three compounds. Yamazaki expressly discloses the importance of chemically reacting the ester (meth)acrylate phosphate with other radically polymerizable monomers to form the radical polymerizable resin, in order to prevent bleeding of the ester (meth)acrylate phosphate to the surface of mold goods either during molding or with time, and to provide a uniform flame retarding property to the mold goods.[11] Thus, Applicant respectfully submits that one of ordinary skill in the art would not have been motivated to modify the teachings of Yamazaki et al. to use a separate halogen-free flame retardant compound with a separate (meth)acrylic polymer and the hydrated metal compound, to obtain Applicant's claimed thermally conductive fire retardant flexible sheet comprising a (meth)acrylic polymer, a halogen-free flame retardant **compound**, and a hydrated metal compound. For at least the foregoing reasons, Applicant respectfully submits that the Office has not established a proper *prima* facie case of obviousness of Applicant's independent claim 1 over Yamazaki et al., and thus the rejection of claim 1 should be withdrawn.

In addition to the foregoing arguments, Applicant(s) submit that a dependent claim should be considered allowable when its parent claim is allowed.[12] Accordingly, provided independent claim 1 is allowed, all claims depending therefrom should also be allowed. Applicant therefore respectfully submits that the Office has not met its burden of establishing a proper *prima facie* case of anticipation and/or obviousness of Applicant's claimed invention over Yamazaki et al. The rejection of claims 1-3 and 7-8 under 35 U.S.C. § 102(b) and 103(a) as being allegedly unpatentable over Yamazaki et al. has been overcome and should be withdrawn.

[11] *Id.*, ¶ 0033].
[12] *In re McCarn*, 101 USPQ 411 (CCPA 1954).

CONCLUSION

Applicant has elected Group I covered by claims 1-3 and 7-8. In view of the foregoing arguments, reconsideration and withdrawal of the rejections of claims 1-3 and 7-8 under 35 U.S.C. § 102(b) for purported anticipation or, in the alternative, under 35 U.S.C. § 103(a) for purported obviousness over Yamazaki et al. is respectfully requested. Prompt allowance of all pending claims is also respectfully requested. The Examiner is invited to contact the undersigned at the indicated telephone number with questions that can be resolved with a simple teleconference.

Respectfully submitted,

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